COMMUNICATIONS EQUIPMENT MODIFICATION NOTE 71 Errata 1
(for Electronics Technicians)
Maintenance, Logistics, and Acquisition Division
W/OPS12: GSS

SUBJECT:	Console Replacement System (CRS) Output Channel Expansion
PURPOSE:	To expand the capabilities of the CRS system from a Maximum 10-channel to a Maximum 11-channel configuration.
SITES AFFECTED:	Site Name / SID / Org. Code WFO Shreveport, LA / SHV / WP9248 Norman, OK / OUN / WP9921
EQUIPMENT AFFECTED:	CRS (B440)
PARTS REQUIRED:	The parts required are issued to each site by W/OPS12 from the National Logistics Support Center under the applicable approved site-specific Request for Change. 2 - DECtalk cards (ASN: B440-2A2A11) 1 - Audio switch module (ASM) card (ASN: B440-2A6A3) 2 - DECtalk-ASM audio cables (ASN: B440-4W12) 2 - NOAA Weather Radio Specific Area Message Encoder (NWRSAME) audio control panel (ACP) interface cables (ASN: B440-1A5W4) 1 - DOS formatted diskette with CRS test database ASCII files (provided by W/OPS12)
PARTS SUPPLIED BY THE SITE:	The following parts shall be provided by the site: 1 - Transmitter audio output cable 3 - NWRSAME (if available) Cable marking tags and tie-wraps, as needed
TOOLS AND TEST EQUIPMENT REQUIRED:	#1 and #2 Phillips screwdrivers CRS test database ASCII files diskette provided by W/OPS12 (see Parts Required) Small flat-blade jeweler's screwdriver Root mean square (RMS) voltmeter/dB meter 600-ohm dummy load with a RJ-11 plug attached Antistatic workstation kit AM-48 test set
TIME REQUIRED:	2 Hours
EFFECT ON OTHER INSTRUCTIONS:	None
AUTHORIZATION:	The authority for this modification are Requests for Change AB396 and AB393.
VERIFICATION STATEMENT:	This procedure was tested and verified at National Weather Service Headquarters, Silver Spring, MD (SLVM2).
GENERAL:	The attachments to this procedure provide the instructions to add output channel(s).

PROCEDURE:	Attachment **A** provides procedures for implementing this modification. Attachment **B** (CRS Hardware Drawings) provides reference information. Attachment **C** provides verification of the new physical configuration (used before applying power). Attachment **D** provides a completed sample of an Engineering Management Reporting System (EMRS) report.
REPORTING INSTRUCTIONS:	Report the completed modification using EMRS according to the instructions in the NWS Instruction 30-2104, Maintenance Documentation, Part 4 and Appendix G. Include the following information on the EMRS report. a. An equipment code of **CRSSA** in block 7. b. A serial number of **001** in block 8. c. A modification number of **71** in block 17a. A sample EMRS report is provided as attachment **D**.

Signature Not Verified

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Attachment **A** - Modification Procedure
Attachment **B** - CRS Hardware Drawings
Attachment **C** - New Configuration Physical Verification
Attachment **D** - Sample EMRS Report

ATTACHMENT A
Modification Procedure

Overview

This modification note provides instructions for expanding a Console Replacement System (CRS) from a Maximum 10-channel configuration to a Maximum 11-channel configuration. The modification procedure contains seven parts:

1. CRS Power-Down Procedures

2. Equipment Upgrade Procedures

3. CRS Power-Up Procedures

4. CRS Login, Application Software Error Verification, and Test Database ASCII File Loading Procedures

5. Post Hardware Expansion Channel Operability Verification Procedures

6. Adding New Transmitter Channels and Editing Site Database ASCII File Procedures

7. CRS Alignment Procedures

NOTE: 1. Read the entire procedure, and verify receipt of all required parts before proceeding with the actual modification.

2. Coordinate with the operations staff before performing this procedure.

CAUTION

CRS must be down to perform the expansion modification. This modification contains test messages that should not be broadcast on any transmitter.

In addition, the site database ASCII file will be recompiled and all dictionary files will be lost! Switch to the backup NWR system, and ensure the dictionary files are backed up (see the *CRS System Administration Manual*) before performing this modification.

PART 1 - CRS POWER-DOWN PROCEDURES

1.1 CRS Application Shutdown

1. Click the **System** menu, and click **Stop System**.
2. Wait until all icons on the *CRS System Status* menu turn **red**.

1.2 UNIX Shutdown

NOTE: 1. The shutdown of the CRS application is just one task before the graceful power-down. After stopping the CRS application software, implement a "controlled/orderly UNIX shutdown with NO automatic reboot" on the main processor (MP), and implement a "controlled/orderly UNIX shutdown" on all FEPs. Upon completion of the controlled/orderly UNIX shutdown, power-down the processors in the following order: MPs first followed by the FEPs.

1. Click the **Maintenance** menu in the main CRS menu to access the *Maintenance* pull-down menu.
2. Click **UNIX Shell** in the *Maintenance* pull-down menu. A *UNIX xterm* window pops up for the entry of UNIX commands.
3. Type the following UNIX command in the *xterm* window:
   su root
4. Press the **Enter** key. The shell responds with a prompt to enter root passwords.
5. Type the password for the root.
6. Press the **Enter** key. The shell prompt changes to a pound sign when all subsequent UNIX command entries have root authority.
7. Type the following UNIX command in the *xterm* window:
   rsh 5MP /sbin/shutdown -i0 -g0 -y
8. Press the **Enter** key. The shell command prompt returns after displaying a confirmation of shutdown initiation on 5MP. UNIX on processor 5MP shuts down.
9. Type the following UNIX command in the *xterm* window:
   rsh 1FEP /sbin/shutdown -i0 -g0 -y
10. Press the **Enter** key. The shell command prompt returns after displaying a confirmation of shutdown initiation on 1FEP. UNIX on processor 1FEP shuts down.
11. Type the following UNIX command in the *xterm* window:
    rsh 2FEP /sbin/shutdown -i0 -g0 -y
12. Press the **Enter** key. The shell command prompt returns after displaying a confirmation of shutdown initiation on 2FEP. UNIX on processor 2FEP shuts down.
13. Type the following UNIX command in the *xterm* window:
    rsh 3FEP /sbin/shutdown -i0 -g0 -y
14. Press the **Enter** key. The shell command prompt returns after displaying a confirmation of shutdown initiation on 3FEP. UNIX on processor 3FEP shuts down.

15. Type the following UNIX command in the *xterm* window:
    rsh 4BKUP /sbin/shutdown -i0 -g0 -y
16. Press the **Enter** key. The shell command prompt returns after displaying a confirmation of shutdown initiation on 4BKUP. The UNIX on processor 4BKUP shuts down.
17. Type the following UNIX command in the *xterm* window:
    cd/
18. Press the **Enter** key.
19. Type the following UNIX command in the *xterm* window:
    /sbin/shutdown -i0 -g0 -y
20. Press the **Enter** key. Each CRS processor for the system may be safely powered-down when UNIX indicates shutdown is complete with the message: *Press any key to reboot….* ***Do not reboot*** any machine; go to section 1.3.

1.3 CRS Hardware Power-Down

Power down all CRS equipment at the operator's station and in the equipment room by turning off the following:

Operator's Station	Equipment Room
0MP and Monitor	4BKUP
5MP and Monitor	1FEP
NWRSAME (all)	2FEP
	3FEP
	LAN bridge
	LAN server
	Monitor
	Printer
	Audio switching assembly (ASA) power supplies
	Modem

PART 2 - EQUIPMENT UPGRADE PROCEDURES

2.1 1FEP, 2FEP, 3FEP, and 4BKUP DECtalk Card Installation

CAUTION

Removing and replacing circuit cards must be accomplished in an antistatic work area using approved antistatic procedures. Refer to attachment C and ensure all equipment cabling is properly marked before removal.

1. Remove all cabling from 1FEP, 2FEP, 3FEP, and 4BKUP, and remove FEPs from the equipment rack to the anti-static work area.
2. Remove the right side covers of 1FEP, 2FEP, 3FEP, and 4BKUP using the following procedure:
   a. Remove the right three screws on the back of the system unit (see attachment **B**, figure A-1). These screws secure the right side access panel of the system to the chassis.
   b. Pull the panel backward while lifting it upward.
3. Remove the screws holding the slot 5 DECtalk card covers in FEPs 1, 2, and 4BKUP; retain the screws (see attachment **B**, figure A-13).
4. Remove and retain the slot covers from each FEP.
5. Reconfigure each new DECtalk for the appropriate I/O address through switch 2 (SW2), as defined in table 1 and pictured in attachment **B**, figure A-11.

NOTE: 1. Depending on the CRS site configuration, there may be as many as five DECtalk cards per FEP. In slots 2 through 6, DECtalk cards are identified as module numbers 0, 1, 2, 3, and 4.

Table 1. DECtalk Card Switch 2 (SW2) Settings

Module#	SW2-1	SW2-2	SW2-3	SW2-4	SW2-5	SW2-6	I/O Address	PC Slot
0	off	off	off	on	off	off	240	2
1	off	on	off	on	off	off	250	3
2	on	off	on	off	off	on	328	4
3	off	off	on	on	off	on	360	5
4	off	off	off	off	on	on	380	6

NOTE: 2. Regardless of FEP, DECtalk card configuration remains constant; meaning, modules 0, 1, 2, 3, and 4 are configured the same for each FEP.

6. Remove the screw holding the slot 6 DECtalk card in 3FEP, and pull out and retain the DECtalk card.
7. Use one of the removed slot covers from section 2.1, step 4 to cover slot 6 in 3FEP, and reinstall a retaining screw.
8. Use table 1 to set up a DECtalk card with the I/O address: 360.
   Install the DECtalk card into slot 5 of 1FEP, and reinstall a retaining screw.
9. Use table 1 to set up a DECtalk card with the I/O address: 360.
   Install the DECtalk card into slot 5 of 2FEP, and reinstall a retaining screw.
10. Use table 1 to set up a DECtalk card with the I/O address: 360.
    Install the DECtalk card into slot 5 of 4BKUP, and reinstall a retaining screw.
11. Replace the 1FEP, 2FEP, 3FEP, and 4BKUP side covers using the reverse procedure in section 2.1, step 2.
12. Install all FEPs into the equipment rack and reconnect all cabling with the exception of the DECtalk to ASC/ASM audio cables.

2.2 ASM Card Installation

1. Remove the ASA slot 11 cover by removing the two screws.

NOTE: There are five jumpers to be set on each ASM card (see table 2).

2. Take the new ASM card and set the jumpers for slot 11 of the ASA according to table 2.
3. Install the new ASM card into slot 11 of the ASA chassis, and tighten the two screws.
4. Using table 2 repeat steps 2 and 3 for the existing ASM cards in slots 4 through 10.

Table 2. ASM Card Jumper Settings

	ASA Slot #	Silence Alarm Jumper "JP1"	ACP Channel Select Jumper "JP2" & "JP3"	BKUP Live/ Playback Cntrl Jumper "JP4"	FEP Select Jumper "JP5"
ASM 1 (channel 1)	1	EN (Enable)	1	BUL2	1FEP
ASM 2 (channel 2)	2	EN (Enable)	2	BUL2	1FEP
ASM 3 (channel 3)	3	EN (Enable)	3	BUL2	1FEP
ASM 4 (channel 4)	4	EN (Enable)	4	BUL2	1FEP
ASM 5 (channel 5)	5	EN (Enable)	5	BUL2	2FEP
ASM 6 (channel 6)	6	EN (Enable)	6	BUL2	2FEP
ASM 7 (channel 7)	7	EN (Enable)	7	BUL2	2FEP
ASM 8 (channel 8)	8	EN (Enable)	8	BUL2	2FEP
ASM 9 (channel 9)	9	EN (Enable)	9	BUL2	3FEP
ASM 10 (channel 10)	10	EN (Enable)	10	BUL2	3FEP
ASM 11 (channel 11)	11	EN (Enable)	11	BUL2	3FEP
ASM PB1 (mon/playback chan 1)	PB1	DIS (Disable)	PB1	PB	1FEP
ASM PB2 (mon/playback chan 2)	PB2	DIS (Disable)	PB2	PB	2FEP

2.3 DECtalk-ASM Audio Cable Installation

Using write-on cable labels, mark and connect the new and existing DECtalk-ASM audio cables on 1FEP, 2FEP, and 3FEP according to table 3.

Table 3. DECtalk to ASM Audio Cables

From	To	Cable Label
1FEP DECtalk 1 “J2” Port	ASM 1 “IN Port”	1-1
1FEP DECtalk 2 “J2” Port	ASM 2 “IN Port”	1-2
1FEP DECtalk 3 “J2” Port	ASM 3 “IN Port”	1-3
1FEP DECtalk 4 “J2” Port	ASM 4 “IN Port”	1-4
2FEP DECtalk 1 “J2” Port	ASM 5 “IN Port”	2-1
2FEP DECtalk 2 “J2” Port	ASM 6 “IN Port”	2-2
2FEP DECtalk 3 “J2” Port	ASM 7 “IN Port”	2-3
2FEP DECtalk 4 “J2” Port	ASM 8 “IN Port”	2-4
3FEP DECtalk 1 “J2” Port	ASM 9 “IN Port”	3-1
3FEP DECtalk 2 “J2” Port	ASM 10 “IN Port”	3-2
3FEP DECtalk 3 “J2” Port	ASM 11 “IN Port”	3-3
1FEP DECtalk 5 “J2” Port	ASM PB1 “IN Port”	1-5
2FEP DECtalk 5 “J2” Port	ASM PB2 “IN Port”	2-5

2.4 Operational and Spare ASC Jumper Settings and Cable Installation

1. Disconnect the DECtalk-ASC audio cables (labeled as 4-1, 4-2, 4-3, and 4-5).
2. Disconnect the two ACP-ASC audio cables.
3. Disconnect the ASC-4BKUP parallel port interface cables.
4. Disconnect the two ACP-ASC control cables.
5. Loosen the four front panel screws and extract the ASC card.
6. Refer to figure 1. On both the operational and spare ASC, set the backup channel configuration by positioning the seven jumpers on JP1. Using all seven jumpers, move the jumpers to the side of the block that lists the number of output channels for your site configuration (the center row of pins is common). For example, if your site has 5, 6, 9, or 10 channels, connect each jumper from the center pin to the top pin; if your site has 1, 2, 3, 4, 7, 8, 11, 12, or 13 channels, connect each jumper from the center pin to the bottom pin.

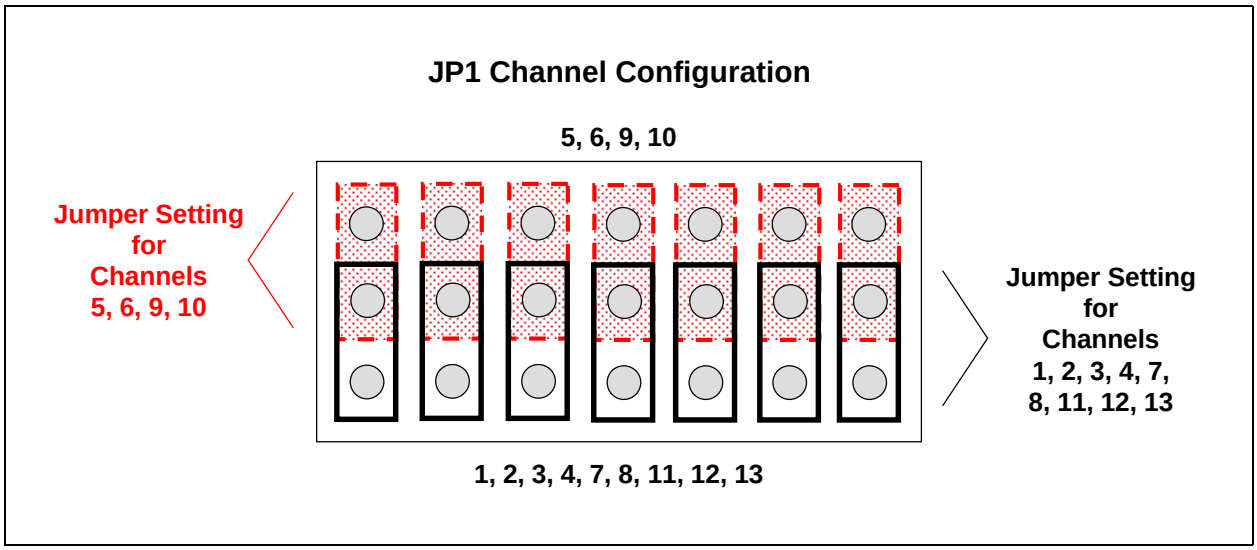


Figure 1. ASC Card Jumper Block

7. Insert the ASC back into the ASA and tighten the four front panel screws.
8. Reconnect the two ACP-ASC control cables.
9. Reconnect the ASC-4BKUP parallel port interface cable.
10. Reconnect the two ACP-ASC audio cables.
11. Using write-on cable labels, mark and connect the new DECtalk-ASC audio cable 4-4, and reconnect cables 4-1, 4-2, 4-3, and 4-5 according to table 4.

Table 4. DECtalk to ASC Audio Cables

From	To	Cable Label
4BKUP DECtalk 1 “J2” Port	ASC “BKUP Audio 1” Port	4-1
4BKUP DECtalk 2 “J2” Port	ASC “BKUP Audio 2” Port	4-2
4BKUP DECtalk 3 “J2” Port	ASC “BKUP Audio 3” Port	4-3
4BKUP DECtalk 4 “J2” Port	ASC “BKUP Audio 4” Port	4-4
4BKUP DECtalk 5 “J2” Port	ASC “BKUP Audio 5” Port	4-5

2.5 New Transmitter Audio Output Cable Installation

1. Connect the OUT1 port of the new ASM card at slot 11 of the ASA chassis by installing the new audio output cable to the Demarc panel position for the new transmitter.
2. Install the new NWRSAME (if available) into the top panel of the 5MP workstation (if available).

3. Install the NWRSAME-ACP interface cable from the NWRSAME rear connector to the “NWRSAME INPUT 1” of ACP2 rear panel; this connects to pins 2, 6, 7, 9, and 10 of the NWRSAME (if available).

NOTE: This completes the hardware modification.

PART 3 - CRS POWER-UP PROCEDURES

CAUTION

Before powering up the FEPs, you must perform the *New Configuration Physical Verification* procedure contained in attachment C to verify proper system configuration. Failure to perform the procedure can result in transmitter broadcasts assigned to incorrect output channels.

3.1 Power-Up FEP

1. Press the **ON/OFF** switch (located on the front center right of the enclosure) to power-up the FEPs. On each FEP, a green power LED lights up when the power is on. The FEPs can be powered up in any sequence. The FEPs go through a memory check, display the system configuration [as recognized by the basic I/O system (BIOS)], then boot the embedded operating system. At the completion of the boot process, the console screen displays the prompt:
   Console Login:

   The embedded operating system automatically initializes to a pre-set level and then waits for final start-up commands from the master MP.

NOTE: The FEPs share a common console through the *Shared Monitor Switch*. The console displays messages while completing the boot process of the FEP currently switched in.

2. Use the *Shared Monitor Switch* to select the next FEP. The console monitor displays:
   Press <F1> to resume, <F2> to Setup.
3. Press **F1** to complete the boot process. The prompt displays:
   Console Login:
4. Repeat for each remaining FEP.

3.2 Power-up Main Processors

NOTE: 1. Power-up 0MP as the master main processor and 5MP as the shadowing processor.

Press the **ON/OFF** switch (located on the front center right of the enclosures) to power-up the MPs. A green power LED on each MP lights up when the power is on. The MPs can be powered-up in any sequence. The MPs go through a memory check, file system check, system configuration verification (as recognized by the BIOS), and then boot the embedded UNIX operating system. At the completion of the boot process, the workstation screen displays the *CRS Login* screen. The MPs are now ready for initialization of the CRS application software.

NOTE: 2. For Build 6.4 and higher: Following power-up, CRS displays the *Security Screen*. To continue the login process, click the **Acknowledge** button.

3. Whenever the MPs are powered-up, they automatically step through the boot process to the multiuser mode without operator intervention.

PART 4 - CRS LOGIN AND TEST DATABASE ASCII FILE LOADING PROCEDURES

4.1 CRS Login

NOTE: 1. For Build 6.4 and higher: Following power-up, CRS displays the *Security Screen*. To continue the login process, click the **Acknowledge** button.

2. The *CRS Login Screen* allows you to log onto CRS. This screen contains two fields: *Login ID* and *Password*. The fields are provided to allow you to type in your assigned login ID and password.

1. Type **admin** (for system administrator) in the *Login ID* field and press **Enter**. The cursor moves to the *Password* field.
2. Type in your assigned password, and press **Enter** to complete the CRS login process. The system displays the *CRS main* display. In addition, the system displays the following error message:
   System is not operational. Perform 'Start CRS' to start system.
3. Click **OK** to clear the message.

NOTE: 3. The error message is only a status message indicating that CRS is not running.

4.2 CRS Test Database ASCII File Loading

NOTE: 1. The following instructions for loading the CRS test database ASCII file assume everything is being done with 0MP set as the MP.

1. Open a *UNIX Shell*:
   a. Click **Maintenance**.
   b. Click **UNIX Shell**.
2. Place the diskette with CRS test database ASCII files in the 0MP diskette drive to copy the desired file from the diskette to CRS.
   a. Type **mdir a:** and press the **Enter** key to display a directory listing of the files on the test database diskette. There are 13 files on the diskette with the following filename convention:

      TYP *W*_CFG.ASCwhere *W* = 1 - 4
      LRG*X*_CFG.ASCwhere *X* = 5 - 8
      MAX*Y*_CFG.ASC where *Y* = 9
      MAX*Z*_CF.ASCwhere *Z* = 10 - 13
      (*W*, *X*, *Y*, and *Z* represent the number of transmitters supported by your CRS)
   b. Locate the applicable test database ASCII file.
   c. Type **mcopy -t a:*filename* /crs/data/SS/*filename*** (where *filename* is the name of the CRS test database ASCII file to be used).
   d. Press the **Enter** key.
3. Click and hold the left mouse button on any white space, move the cursor to select **XCRS_SITE Utility,** and release the button to display the *XCRS_SITE Utility* window.
4. Click the **Select ASCII Site Setup** button to display the list of ASCII files.
5. Select the desired database ASCII filename copied from the diskette in section 4.2, step 2c, and double click it.

NOTE: 2. The directory selection block has a default directory name of */crs/data/SS*; the file filter block has a default file name of */crs/data/SS/*.ASC*. If the desired filename does not appear, the file may have been copied to the wrong directory in section 4.2, step 2.c. Should this be the case, change the default directory name to the directory specified in section 4.2, step 2.c. Another reason the filename may not appear is that it may have been filtered out. UNIX is case-sensitive: If the file was copied with an ASC extension in lowercase, the filename will not display. In this case, change the filter filename to **/crs/data/SS/*.asc** and the filename will display.

6. Select **Initialize System Configuration and Database** to ensure the entire system database and configuration is erased and replaced.
7. Click the **Start Site Configuration** button. The system displays:
   Will now perform FULL site reconfiguration. Continue?
8. Click **OK**. The "wristwatch" and the "working" message display. Several messages scroll by. The last message reads:
   Finished with site configure.

   The "wristwatch" and "working" message disappear.
9. Ensure there are no error messages at the completion of the site configuration process. Any error messages must be reported to CRS site support staff at 301-713-0191 x145 or x144.
10. Restart CRS by clicking on **Start CRS System**. The system displays:
    The CRS system will be STARTED. Continue?
11. Click **OK**. The "wristwatch" and the "working" message display. Several messages scroll by. The last message refers to starting 4BKUP. The "wristwatch" and "working" message disappear.
12. Click **Exit** to close the *XCRS_SITE Utility* window.
13. Click the **UNIX Shell** window to select it. At the prompt, type **Exit** and press **Enter** to close the UNIX Shell.
14. Open the *System Status* window.
    a. Click **System**.
    b. Click **System Status**.
15. Monitor the *System Status* window and ensure the system is operational.

PART 5 - POST HARDWARE EXPANSION CHANNEL OPERABILITY VERIFICATION PROCEDURES

5.1 Channel Operability Verification

NOTE: The CRS test database ASCII files contain test messages configured for continuous broadcast for channel operability verification.

1. Connect a monitor speaker or headphones to the ACP.
2. Using the *Channel Select* control, select each channel, one at a time, and monitor the output for the correct message (i.e., with channel one selected, the message output is: *This is transmitter one, audio switch module one*).

5.2 FEP Backup Mode Channel Operability Verification

1. Click **Maintenance**.
2. Click **Front-End Processor Switch**.
3. Select **1** in the *Front-End Processor Switch* window under *FEP*.
4. Select **Out** under *Switch*.
5. Select **Yes** under *Backup*.
6. Click **Save the current record** to execute the FEP switch process. The *Question* box displays:
   Switch out the FEP FULLY offline???
7. Click **OK** to continue. The system displays the “wristwatch” and the message:
   Requesting FEP Switchout
8. Monitor the *1FEP* and *4BKUP* system status icons. Verify that the *1FEP* icon is in backup mode and the *4BKUP* icon displays the online status.
9. Upon completion of the FEP switch process, repeat section 5.1, steps 1 and 2.
10. Upon completion of the FEP backup mode channel operability verification, perform the following to display the *Front-End Processor Switch* window:
    a. Click **Maintenance**.
    b. Click **Front-End Processor Switch**.
11. Select **1** in the *Front-End Processor Switch* window under *FEP*.
12. Select **IN** under *Switch* to switch 1FEP back in.
13. Click **Save the current record** to execute the FEP switch process. The system displays the “wristwatch” and the message:
    Requesting FEP switch-in…
14. Monitor the *1FEP* and *4BKUP* system status icons. Verify that the *1FEP* icon is online and the *4BKUP* icon displays the backup mode status.
15. When the system returns to normal operation, perform the following steps to close the *Front-End Processor Switch* window and stop CRS:
    a. On the *Front-End Processor Switch* window:
       (1) Click **File**.
       (2) Click **Exit**.
    b. On the *Main CRS* menu:
       (1) Click **System**.
       (2) Click **Stop System**.
       (3) Click **OK**.

(4) Click **Close**.

16. Monitor the *System Status* window and verify the CRS application has stopped.

PART 6 - ADDING NEW TRANSMITTER CHANNELS AND EDITING SITE DATABASE ASCII FILE PROCEDURES

6.1 Adding New Transmitter Channels

1. Click and hold the left mouse button on any white space, move the cursor to select **XCRS_SITE Utility,** and release the button to bring up the *XCRS_SITE Utility* window.
2. Click **Select ASCII Site Setup** button to display the list of ASCII files.
3. Select the current site database ASCII file and double click.
4. Click **Add Transmitter(s)** button to start the *addxmt* program. It displays the number of transmitters currently available, the next available transmitter to be added, and its appropriate processor and slot.
5. Use the following steps to add a new transmitter to the *Site Database ASCII* file:

   a. Mnemonic

      (1) Type option number **1** and press **Enter** to select *Mnemonic*.

      (2) Type **a** and press **Enter** at the program prompt to add *Mnemonic*.

      (3) Type **mmmmm** and press **Enter** (where *mmmmm* is the desired mnemonic), up to a length of 5 characters. The program returns the *Mnemonic*.

      (4) Type **0** or press **Tab** and press **Enter** to complete the *Mnemonic* selection.

   b. Call Sign

      (1) Type option number **2** and press **Enter** to select *Call Sign*.

      (2) Enter the **Call Sign** in the same manner as the *Mnemonic*, up to a length of 5 characters. The program returns the *Call Sign*.

      (3) Type **0** or press **Tab** and press **Enter** to complete the *Call Sign* selection.

   c. Frequency

      (1) Type option number **3** and press **Enter** to select *Frequency*. The *Frequency* option only allows a selection of one of the seven choices listed.

      (2) Type **n** and press **Enter** (where *n* is the desired *Frequency* choice). The program returns the *Frequency* choice by displaying an asterisk (*) next to the *Frequency* selection.

      (3) Type **0** or press **Tab** and press **Enter** to complete the *Frequency* selection.

d. Location

(1) Type option number **4** and press **Enter** to select *Location*.

(2) Enter the *Location* (in the same manner as *Mnemonic* and *Call Sign*) up to a length of 40 ASCII characters. The program returns the *Location*.

(3) Type **0** or press **Tab** and press **Enter** to complete the *Location* selection.

e. Add Transmitter

(1) Type option number **5** and press **Enter** to use all the parameters defined in the first four steps to configure a new transmitter in the database ASCII file. The program indicates a new transmitter is needed.

(2) Type **y** and press **Enter**. The program returns the assignment of each transmitter to its proper processor and slot. The program indicates the appropriate database ASCII file has been updated and the original has been saved with the .SAV extension.

6. The program then asks if another transmitter is needed. If an additional transmitter is needed, repeat steps 5a through 5e for the next new transmitter. If not, type **n** and press **Enter** to exit the program.

6.2 Editing the Site Database ASCII File

1. When exit **addxmt** is done, the *Question* box displays:
Ready to recompile selected ASCII file. Continue?
2. Click **Cancel** to close the *Question* box.
3. Select **Initialize System Configuration and Database** to ensure the entire system database and configuration is erased and replaced.
4. Click **Start Site Configure**. The *Question* box displays:
Will now perform FULL site reconfiguration. Continue?
5. Click **OK** to recompile the database ASCII file. Upon completion of the database ASCII file recompile process, the system displays:
Finished with site configure.
6. Restart CRS by clicking on **Start CRS System**. The system displays:
The CRS system will be STARTED. Continue?
7. Click **OK**. The “wristwatch” and the “working” message display. Several messages scroll by. The last message refers to starting 4BKUP, and the “wristwatch” and “working” message disappear.
8. Click **Exit** to close the *XCRS_SITE Utility* window.
9. Open the *Alert Monitor* window:

a. Click **System**.

b. Click **Alert Monitor**.

NOTE: No attempt is made by **addxmt** to establish station identifiers, broadcast programs, broadcast suites, message types, voice parameters, keep alive messages, interrupt messages, etc., for the new channels. These must be configured through the CRS graphical user interface (see the *CRS Site Operator's Manual*) and updated in the site database ASCII file.

PART 7 - CRS ALIGNMENT PROCEDURES

NOTE:
1. When performing any of the following alignments, the system output at the ASM card must be disconnected and terminated into the AM-48 test set.
2. In the following sections, ***all*** procedures must be performed, but ONLY for the added transmitters, i.e., added ASM cards, ***NOT starting from channel one***.
3. ***During alignment in section 7.1 CRS remains operational. However, the audio to each transmitter being tested will be interrupted while the transmitter is being aligned.***

7.1 Backup Live Alignment

Three alignments need to be made on the CRS. These alignments should be performed in the following sequence:

1. ACP Ref Mark Alignment
2. ASM Card Alignment
3. NWRSAME Alignment

During BUL, alert and transfer tones are generated by the ACP and NWRSAME tones are generated by the NWRSAME panel. Refer to table 5 for the alignments in the following sections.

Table 5. Tone Frequencies, Tolerances, and Duration

Tone Type	Frequency	Tolerance	Duration	Tolerance
Primary to Secondary Transfer	1800 Hz followed by 2400 Hz	± 5 Hz ± 5 Hz	5 sec. 5 sec.	± 0.5 sec. ± 0.5 sec.
Secondary to Primary Transfer	2400 Hz followed by 1800 Hz	± 5 Hz ± 5 Hz	5 sec. 5 sec.	± 0.5 sec. ± 0.5 sec.
Alert Tone 1	1050 Hz	± 0.3%	10 sec.	± 2 sec.
Alert Tone 2*	1200 Hz	± 0.3%	10 sec.	± 2 sec.
Alert Tone 3*	1350 Hz	± 0.3%	10 sec.	± 2 sec.
Alert Tone 4*	1500 Hz	± 0.3%	10 sec.	± 2 sec.
Alert Tone 5*	1650 Hz	± 0.3%	10 sec.	± 2 sec.

* Not currently used–reserved for future use.

NOTE: 1. This alignment requires two people: one in the operations room, and one in the equipment room.

The following equipment is required:

1. Ameritec AM-48 Transmission Test Set to read the audio signal level
2. Small jeweler's screwdriver
3. RJ-11 phone cable (approximately 6 feet)

NOTE:
2. When performing any of the following alignments, the system output at the ASM card must be disconnected and terminated into the AM-48 test set. The AM-48 must be set to the 600-ohm internal terminator.
3. The OUT1 and OUT2 jacks on the ASM card front panel are ***not*** isolated from each other. Using a second output affects the output of the first.
4. The ACP Ref mark alignment must be done by site personnel. Both the ASM card alignment and NWRSAME alignment ***cannot*** be performed until the ACP Ref mark alignment is done.
5. Starting at this point, for the rest of Part 7, *X* will be used to denote any added transmitters/ASM cards that need to undergo adjustment or calibration procedures.

7.1.1 ACP Ref Mark Alignment

Calibration Procedures:

1. Power on the **AM-48 Test Set** using the rocker switch (upper right side).
2. Set the **AM-48 Test Set** controls as indicated in table 6 (refer to the *AM-48 Instruction Manual* for further explanations on setup).

Table 6. AM-48 Test Set Controls

Function	Left Side of Test Set
Volume	Mid position
MON RCV, MON SND, Talk Switch	Mid position
Term, BRDG	Term
TONE, PULSE, ON HK	TONE
900 ohm, 600 ohm	600 ohm
2w, 4w, 4w REC	2w
	Right Side of Test Set

Table 6. AM-48 Test Set Controls (Continued)

Function	Left Side of Test Set
ABS, REL, SEND	ABS
DAMP, OFF	OFF
SEL Filter	C-MSG (Displayed at bottom of LCD reader) (Printed on bottom of display)
SEL MEASURE	L/F (Printed on bottom of display)
SEL SEND	Quiet (Printed on bottom of display)
MF, DTMF, SHIFT	DTMF
SF SKP, NOR, X TONE	NOR
RCL/STC, PRINT	Mid position

3. Connect the RJ-11 cable to the 4W RCU jack on the bottom of the AM-48.
4. Remove the transmitter *X* feed output RJ-11 plug from the ASM card output jack.
5. Connect the AM-48 Test Set to the ASM card output jack corresponding to Transmitter *X*.
6. Position the ACP **Channel Select** knob to ***X*** (transmitter *X*).
7. Set the index mark on the front of the ACP *Tone* volume control knob to the **Ref** position.
8. To start BUL on Channel No.*X*, push the **Transmitter Select *X*** button and the **Transmitter Select Enable** button in sequence. These controls are in the *BACKUP LIVE* area on the front of the ACP.
9. Push the **Transfer/Alert Tones 1** button to cause the ACP to generate the 1050 Hz alert tone. The duration of the 1050 Hz alert tone is 10 seconds.
10. Observe the VU meter on the ACP front panel. It should indicate **0** on the red scale.
11. If the VU meter does not indicate a reading of **0**, adjust the **Tone** volume control until that level is obtained.
12. Repeat steps 9, 10, and 11 until a reading of **0** is obtained. When the *Tone* volume control is set to the true reference position, the ACP provides the selected alert tone level of 0.

NOTE: If the final position does not coincide with the ACP Ref marking, a non-permanent mark (tape, sticker, etc.) can be made on the panel of the final alignment position so operators do not incorrectly change the tone knob back to align with the Ref marking. DO NOT deface the front of the ACP with any kind of permanent marking!

13. Make sure to keep the Ref position as aligned in this procedure. Do not change this position unless another alignment is needed. Place a note to inform the operators not to touch the knob.
14. To stop BUL, push the **Transmitter Select Enable** button and the **Transmitter Select *X*** button in sequence.

7.1.2 ASM Card Alignment

Alignment Procedures:

1. Ensure the AM-48 Test Set is connected to the ASM card output jack corresponding to Transmitter *X*.
2. Ensure the index mark on the *Tone* volume control knob is set to the reference position as determined in section 7.1.1, *ACP Ref Mark Alignment* procedure.
3. Position the ACP **Channel Select** knob to ***X*** (Transmitter *X*).
4. Start BUL on ASM output channel No.*X* by pushing the **Transmitter Select *X*** button and the **Transmitter Select Enable** button in sequence. These buttons are located in the *BACKUP LIVE* block area on the front of the ACP.

NOTE:
1. The alert tone output from the ACP lasts for only 10 seconds. It is recommended that a second person push the **Alert Tone 1** button for a near continuous tone output. This smooths out the calibration effort and minimizes the time required.
2. During BUL, the VU meter monitors the ACP tone output, not the output of the ASM card. The ACP tone output is sent to the ASM card by way of the ASC for final output.

5. Push the **Transfer/Alert Tones 1** button to send an alert tone to the ASM card No. *X* output.
6. Using a small jeweler's screwdriver, adjust the transmitter gain control potentiometer through the small hole in the ASM front panel (located above the **In** jack) until a reading of **0** dBm (as close to 0 dBm without going positive) is measured on the AM-48 Test Set.
7. Repeat steps 4, 5, and 6 until a reading of **0** dBm is obtained.
8. Push the **Pri/Sec** transmitter transfer tone button to send out 5 seconds of 1800 Hz tone followed by 5 seconds of 2400 Hz tone.
9. Verify a reading of 0 dBm (± 1.5 dBm) on the AM-48 Test Set for the *Transfer Tones*.
10. Push the **Sec/Pri** transmitter transfer tone button to send out 5 seconds of 2400 Hz tone followed by 5 seconds of 1800 Hz tone.

11. Verify a reading of 0 dBm (± 1.5 dBm) on the AM-48 Test Set for the *Transfer Tones*.
12. To stop BUL, push the **Transmitter Select Enable** button and then the **Transmitter Select *X*** button in sequence.
13. Repeat steps 1 through 12 to align each of the added ASM cards in the system. Remember that each ASM card output is activated by selecting the appropriate transmitter on the **Channel Select** knob and by pushing the respective **Transmitter *X*** button and then the **Transmitter Select Enable** button. ASM card 1 corresponds to Transmitter 1, ASM card 2 corresponds to Transmitter 2, etc.

7.1.3 NWRSAME (ECR-200) Panel Calibration

NOTE: 1. When performing the following calibration, the system output of the ASM card must be disconnected, and the AM-48 Test Set connected in its place. Refer to AM-48 set up in section 7.1.1, step 1.

The NWRSAME (ECR-200) calibration must be performed by site personnel.

A small screwdriver is required to adjust the NWRSAME gain control potentiometer.

Calibration Procedures:

NOTE: 2. The front panel key sequence on the NWRSAME for a continuous NWRSAME preamble tone output is TEST and then SEND. Pressing the CANCEL key stops the sequence.

1. Ensure the AM-48 Test Set is connected to the ASM card output jack corresponding to Transmitter *X*.
2. Ensure the *Tone* volume control knob is set to the index mark as determined in section 7.1.1, *ACP Ref Mark Alignment* procedure.
3. Position the ACP **Channel Select** knob to ***X*** (Transmitter *X*).
4. Start BUL on ASM output channel No.1 by pushing the **Transmitter *X*** button and the **Enable** button in sequence. These are located in the *BACKUP LIVE* block area on the front of the ACP.
5. Initiate a continuous NWRSAME preamble tone output from the NWRSAME panel by pressing the **TEST** key once and then the **SEND** key.
6. Observe the VU meter reading on the front of the ACP.
7. Locate the output gain control potentiometer on the back of the NWRSAME panel next to the terminal block.

8. Observe the AM-48 Test Set and adjust the gain control potentiometer for a reading of - 4.5 dBm ± 0.5 dBm on the AM-48. This should correspond to between (approximately) -2.0 and -3.0 on the ACP VU meter.

NOTE: 3. The output gain potentiometer is the only control on the back panel of the NWRSAME. Since it is a single turn potentiometer, adjustment of the control is very sensitive.

9. Push the **CANCEL** key on the NWRSAME to stop the generation of the preamble.
10. Push the **Enable** button and **Transmitter *X*** button in sequence to stop BUL.

NOTE: 4. The levels for voice, warning tone, and SAME messages have been selected to optimize detectability by a receiver. This maximizes transmitter modulation deviation without causing distortion. The levels selected herein assume that the frequency response of the telecommunications line to the transmitter is relatively flat and that the pre-emphasis circuit in the transmitter is within 1.0 to 2.0 dB of the required 6.0 dB per octave. If these assumptions are not correct, measurements at the audio input at the transmitter site may be necessary to obtain the optimum modulation (corresponding to a deviation of 4.5 kHz for the NWRSAME tones). If these adjustments to the NWRSAME level are necessary (when based on the levels at the transmitter site audio input), the corresponding levels at the ASM card output should be recorded.

7.2 CRS Alignment for Normal Operation (to match BUL Alignment)

During normal operation, all audio output levels from the DECtalk cards are controlled by the CRS application software through the graphic user interface (GUI) to adjust the alert tone amplitude, transmitter transfer tone amplitude, NWRSAME tone amplitude, and voice volume.

NOTE:
1. Do not put the CRS on-the-air while performing the following procedures.
2. When performing any of the following alignments, the system output at the ASM card must be disconnected and terminated into the AM-48 test set. The AM-48 must be set to the 600-ohm internal terminator.
3. Any output amplitude changes, which were made through the GUI, will be permanently saved on the system disk. They will remain unchanged in the system unless the operator makes another amplitude change, restores a backup database, or recompiles a new database.
4. This alignment requires two people: one in the operations room, and one in the equipment room.
5. In the event the 4BKUP processor has replaced one of the FEPs, the CRS software matches the DECtalk amplitude settings for the affected DECtalk cards of the replaced FEP.

Four adjustments to the DECtalk cards need to be made under the *Transmitter Configure* menu. These adjustments should be performed in the following sequence for each transmitter:

1. DECtalk Card Alert Tone Output Level Adjustment
2. DECtalk NWRSAME Tone Output Level Adjustment
3. DECtalk Transmitter Transfer Tone Output Level Adjustment
4. DECtalk Synthesized Voice Output Level Adjustment

The following equipment is required for these adjustments:

1. Ameritec AM-48 Transmission Test Set
2. RJ-11 phone cable (approximately 6 feet)

7.2.1 DECtalk Card Alert Tone Output Level Adjustment

The alert tone output level adjustment is accomplished as follows:

NOTE: 1. Position the *ACP Channel Select* knob to correspond with the transmitter under adjustment.

1. Power on the **AM-48 Test Set** using the rocker switch (upper right side).
2. Set the **AM-48 Test Set** controls as indicated in table 5.
3. Connect the RJ-11 cable to the 4W RCU jack on the bottom of the AM-48.
4. Starting with *Transmitter* number *X*, remove *Transmitter X* feed output RJ-11 plug from the ASM card output jack.
5. Connect the AM-48 Test Set to the ASM card output jack corresponding to Transmitter *X*.

NOTE: 2. The OUT1 and OUT2 jacks on the ASM card front panel are not isolated from each other. Using a second output will affect the output of the first.

6. Click the **Emergency Override** hot key (**E** button) on the *CRS Main Menu* for an *Emergency Override window*.
7. Select a message type from the *Message Type* display list.

NOTE: 3. The selected message type must be defined in the *Broadcast Program* of the selected transmitter. Consult the CRS focal point for a correct message type to select for a specific transmitter.

8. Click the **Area Selection** button and specify a listening area/transmitter combination by clicking the **Zones** drop down menu and select **Transmitters**.

9. In the *Choices* section under *Transmitters*, click the transmitter in the displayed list which corresponds to the added ASM card undergoing calibration. The first transmitter name corresponds to ASM card 1, the next transmitter corresponds to ASM card 2, etc.
10. In the *Areas* box, select an area corresponding to the transmitter under test.
11. Click the single arrow under the *Areas* box. This copies the area to the *Selections Areas/Zones* box.
12. Check the *Affected Transmitters* box to ensure only the transmitter under test is bolded.

NOTE: 4. If multiple transmitters appear in bold in the *Affected Transmitters* box, proceed to the next step. If not, skip to step 15.

13. Remove the area with multiple transmitters by clicking that area (in the *Selections Areas/Zones* box) and clicking the **eraser** icon and the bottom right of the *Areas/ Zones* box. This removes the area from the *Areas/Zones* box.
14. Repeat steps 9 through 11 to choose another area.
15. Click the **OK** button to return to the *Emergency Override* window.
16. Select the **Alert** button (box turns red when selected) and deselect the **SAME Transmitter** (box turns gray) to have the DECtalk card output only the 1050 Hz alert tone. Only the transmitter in bold should be deselected. The transmitters that are grayed out are not affected.
17. Click the **Transmit** button to start the emergency override broadcast of the alert tone.

NOTE: 5. The ACP VU meter does not monitor the final output of the ASM card. The amplitude of the monitored signal (from the VU meter) is 1.2 higher than the amplitude of the final output of the ASM card (i.e., the 1050 Hz *Alert Tone*). When the ASM card's final output amplitude is set to 0 dBm (using the AM-48 Test Set), the VU meter reading should indicate a level of + 1.2 (± 0.5). Therefore, the VU meter can be used to measure the output level in conjunction with the AM-48 Test Set. For the transmitter switching tones and NWRSAME tones, the output is lower at the higher frequencies.

18. Observe the VU meter (red scale) and the AM-48 Test Set and note the readings.
19. Wait for the *On the Air Broadcast* window, click the **Stop** button, then click **Exit**.
20. Click the **Delete** button to delete the created emergency override message.
21. If the measured output level of the DECtalk generated alert tone does not equal 0 dBm on the AM-48 Test Set (+ 1.2 [± 0.5] on the ACP VU meter), then go to step 22. Otherwise, go to section 7.2.2.

22. Select the **Transmitter Configure** window under the *Transmitters* menu (see Section 3, Figure 21, of the *Site Operator's Manual*).
23. Click the selected **Transmitter** from the *Transmitters* list followed by the **Amplitudes** button to access the *Amplitudes* window (see Section 3, Figure 23, of the *Site Operator's Manual*).
24. Move the **Alert Tone Amplitude** slider to increase or decrease the alert tone output amplitude, as necessary, to equal 0 dBm on the AM-48 Test Set (+1.2 [±0.5] on the ACP VU meter). A good starting point on the *Alert Tone Amplitude* is **15**.
25. Click the **OK** button to return to the *Transmitter Configure* window.
26. Click the **Save** hot key (diskette icon) to save the new DECtalk card *Amplitude* settings.

NOTE: 6. Clicking the *Save* hot key, downloads the new DECtalk amplitude settings to the associated DECtalk card and reduces the old values. Downloading time ranges from one minute to several minutes depending on the size of the current broadcast message. The downloading process will not start until the end of the current broadcast message is reached.

27. Return to section 7.2.1, step 6, and repeat the measurement process for the same selected transmitter until the respective tone amplitude generated by that specific DECtalk card is equal to 0 dBm on the AM-48 Test Set (+1.2 [± 0.5] on the ACP VU meter).

7.2.2 DECtalk NWRSAME Tone Output Level Adjustment

NOTE:
1. The AM-48 Test Set is unable to measure this short-burst NWRSAME tone at the ASM card output. Optionally, an analog AC voltmeter (like the HP 400E) with a 600 ohm load can be used in place of the AM-48. The voltmeter should read -4.5 dBm at the ASM output.
2. The levels for voice, warning tone, and SAME messages have been selected to optimize the detectability by a receiver. This maximizes the transmitter modulation deviation without causing distortion. The levels selected herein assume that the frequency response of the telecommunications line to the transmitter is relatively flat and that the pre-emphasis circuit in the transmitter is within 1.0 to 2.0 dB of the required 6.0 dB per octave. If these assumptions are not correct, measurements at the audio input at the transmitter site may be necessary to obtain the optimum modulation (corresponding to a deviation of 4.5 kHz for the NWRSAME tones). If these adjustments to the NWRSAME level are necessary (when based on the levels at the transmitter site audio input), the corresponding levels at the ASM card output should be recorded.

The output level adjustment is as follows:

1. Click the **Emergency Override** hot key on the *CRS Main Menu* for an *Emergency Override window* (see Section 3, Figure 77, of the *Site Operator's Manual*).
2. Select a message type from the *Message Type* display list.
3. Click the **Area Selection** button and specify a listening area/transmitter combination by clicking the **Zones** drop down menu and select **Transmitters**.
4. In the *Choices* section under *Transmitters*, click the transmitter in the displayed list which corresponds to the added ASM card undergoing calibration. The first transmitter name corresponds to ASM card 1, the next transmitter corresponds to ASM card 2, etc.
5. In the *Areas* box, select an area corresponding to the transmitter under test.
6. Click the single arrow under the *Areas* box. This copies the area to the *Areas/ Zones* box.
7. Check the *Affected Transmitters* box to ensure only the transmitter under test is bolded.

NOTE: 3. If multiple transmitters appear in bold in the *Affected Transmitters* box, proceed to the next step. If not, skip to step 10.

8. Remove the area with multiple transmitters by clicking that area (in the Areas/ Zones box) and clicking the **eraser** icon and the bottom right of the *Areas/Zones* box. This removes the area from the *Areas/Zones* box.
9. Repeat steps 4 through 6 to choose another area.
10. Click the **OK** button to return to the *Emergency Override* window.
11. Select the **SAME Transmitter** button (box turns red) and deselect the **Alert** (box turns grey) to have the DECtalk card output the NWRSAME tones only.
12. Click the **Transmit** button to start the emergency override broadcast of the NWRSAME tones.
13. Observe the VU meter (red scale) and note the reading.
14. Click **Exit**.
15. Wait for the *On the Air Broadcast* window, click the **Stop** button, then click **Exit**.
16. Click the **Delete** button to delete the created emergency override message.

NOTE: 4. The level on the VU meter will be +1.2 (± 0.5) higher than the actual output of the ASM card (i.e., if the output at the ASM card is -4.5 dB, the VU meter will indicate between -3 and -4). If the level needs adjustment, go to step 17. Otherwise, go to section 7.2.3.

17. Select the **Transmitter Configure** window under the *Transmitter* menu (see Section 3, Figure 21, of the *Site Operator's Manual*).
18. Click the selected **Transmitter** from the *Transmitters* list followed by the **Amplitudes** button to access the *Amplitudes* window (see Section 3, Figure 23 of the *Site Operator's Manual*).
19. Move the **SAME Tone Amplitude** slider to increase or decrease the NWRSAME output amplitude, as necessary, to obtain correct level on the VU meter (see step 13). A good starting point on the *SAME Tone Amplitude* is **6**.
20. Click the **OK** button to return to the *Transmitter Configure* window.
21. Click the **Save** hot key (diskette icon) to save the new DECtalk card *Amplitude* settings.

NOTE: 5. Clicking the *Save* hot key, downloads the new DECtalk amplitude settings to the associated DECtalk card and reduces the old values. Downloading time ranges from one minute to a several minutes depending on the size of the current broadcast message. The downloading process does not start until the end of the current broadcast message is reached.

22. Return to section 7.2.2, step 1, and repeat the measurement process for the same selected transmitter until the respective tone amplitude generated by that specific DECtalk card indicates the correct level on the VU meter (see step 13).

7.2.3 DECtalk Transmitter Transfer Tone Output Level Adjustment

The output level adjustment procedure is as follows:

1. Select the **Transmitter Configure** window under the *Transmitter* menu (see Section 3, Figure 21, of the *Site Operator's Manual*).
2. Click the selected **Transmitter** from the *Transmitter* list. In the *Attributes* section under *Mode*, if the *Primary* button is red, select the *Secondary* button. Conversely, if the *Secondary* button is red, select the *Primary* button.
3. Click the **Save** hot key (diskette icon). A popup question window displays with: *Mode has been modified. Do you want to change mode?*
4. Click **OK**.

NOTE: 1. Changing transmitter mode from *Primary* to *Secondary* sends out 5 seconds of 1800 Hz tone followed by 5 seconds of 2400 Hz tone.

2. Changing transmitter mode from *Secondary* to *Primary* sends out 5 seconds of 2400 Hz tone followed by 5 seconds of 1800 Hz tone.

5. Measure and record the transmitter transfer tone output level with the AM-48 Test Set connected to the ASM card output jack corresponding to Transmitter *X*.

6. If the output level of the DECtalk transmitter transfer tones are not 0 dBm (± 1.5 dBm), go to step 7. Otherwise, click the **Exit** button to quit the *Transmitter Configure* window and go to section 7.2.4, step 1.
7. Select the *Transmitter Configure* window under the *Transmitter* menu (see Section 3, Figure 21, of the *Site Operator's Manual*).
8. Click the selected **Transmitter** button followed by the **Amplitudes** button to access the *Amplitudes* window (see Section 3, Figure 23, of the *Site Operator's Manual*).
9. Move the **Transfer Tone Amplitude** slider to increase or decrease the *transmitter transfer tone* output amplitude, as necessary, to match that measured in step 5. A good starting point on the *Transfer Tone Amplitude* is **15**.
10. Click **OK** to return to the *Transmitter Configure* window.
11. Click the **Save** hot key to save new DECtalk card *Amplitude* settings.

NOTE: 3. Clicking the *Save* hot key, downloads the new DECtalk amplitude settings to the associated DECtalk card and reduces the old values. Downloading time ranges from one minute to a several minutes depending on the size of the current broadcast message. The downloading process does not start until the end of the current broadcast message is reached.

12. Return to step 2 and repeat the measurement process for the same selected transmitter until the respective tone amplitude generated by that specific DECtalk card, and measured at the associated ASM card output, equals that measured and recorded in step 5.

7.2.4 DECtalk Synthesized Voice Output Level Adjustment

NOTE: 1. The **Voice Amplitude** setting has no effect on the voice level output. The audio level output of the DECtalk card is controlled by the **Volume** setting under **Voice Parameters**.

1. Observe the VU meter to ensure peak deflection is approximately **0** (±2.0). If adjustment is required, go to step 2. If no adjustment is needed, go to step 12.
2. Click the *Transmitters* menu, then select the **Transmitter Configure** window (see Section 3, Figure 21, of the *Site Operator's Manual*).
3. Click **Amplitudes**.
4. Move the **Voice Amplitude** slider to **25**.

NOTE: 2. All CRS output level measurements and alignments should be made with the AM-48 Test Set connected to the appropriate ASM card output.

5. Click the **OK** button to return to the *Transmitter Configure* window.
6. Click **Voice Parameters**.
7. Move the **Volume** slider to **25** (a good starting point).
8. Click the **OK** button to return to the *Transmitter Configure* window.
9. Click the **Save** hot key to save the new DECtalk synthesized voice amplitudes.

NOTE: 3. After the **Save** key is clicked, the new settings replaces the old values. The new DECtalk amplitude settings are downloaded to the associated DECtalk card. Downloading time can range from one to several minutes depending on the size of the current broadcast message. The downloading process does not start until the end of the current broadcast message is reached.

10. Observe the VU meter to ensure peak deflection is approximately **0** (±2.0).
11. Repeat steps 6 through 10, as necessary, to obtain proper level.
12. Repeat the four DECtalk card output level adjustments in sections 7.2.1, 7.2.2, 7.2.3, and 7.2.4 on every added DECtalk card output channel in the CRS. Remember, ACP channel select 1 corresponds to ASM card 1 and transmitter 1, channel select 2, corresponds to ASM card 2 and transmitter 2, etc.

NOTE: 4. At the completion of the alignment procedure, disconnect the test equipment and return the system to normal operation.

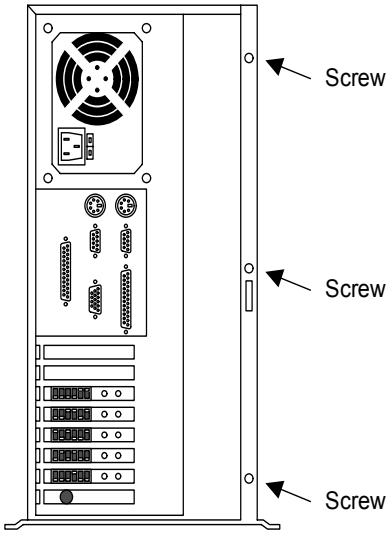
7.2.5 Live Voice and Digitized Voice Output Level Adjustment

The output level of live voice and digitized voice is controlled by the microphone volume **Mic**. control on the front of the ACP. When the index mark of the microphone volume control knob is set to the **Auto** position, voice volume is automatically adjusted by the *Symetrix 425 Voice Processor*. A positive “click” is felt when this mode is selected. When the microphone volume control is not set to the **Auto** position, voice volume is manually controlled. Voice output level is displayed using the VU meter on the front of the ACP.

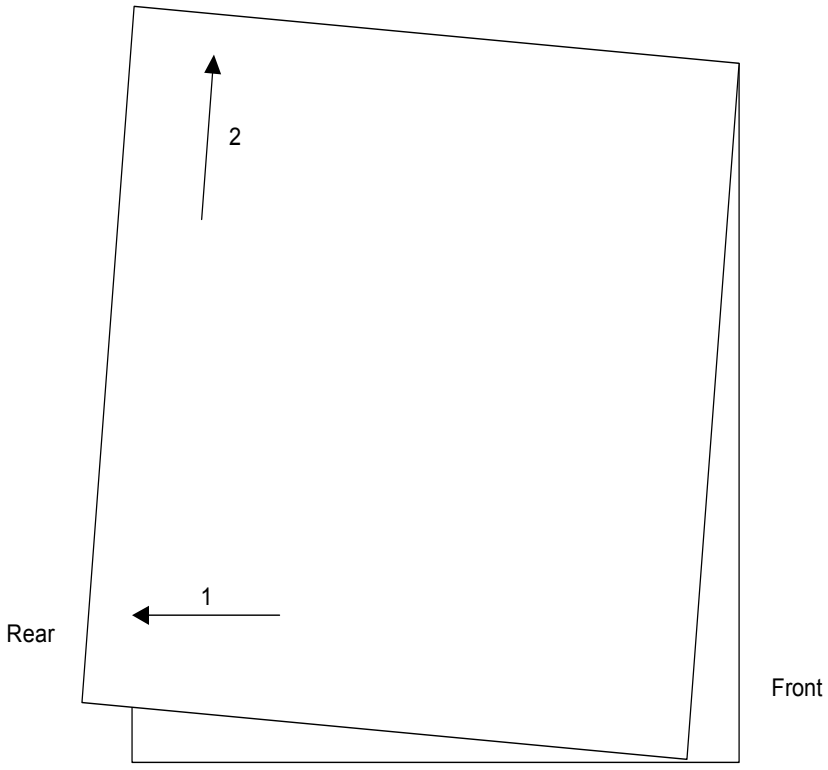
7.2.6 Matching the CRS Outputs for BUL Operation

For BUL, the operator can adjust the **Tone** volume control on the front of the ACP to adjust the output level for the alert tones, transmitter transfer tones, and NWRSAME tones. During BUL, alert tones and transmitter transfer tones are generated by the ACP. NWRSAME tones are generated by the NWRSAME. The live voice output level is controlled by the **Mic** volume control on the front of the ACP.

ATTACHMENT B
CRS Hardware Drawings



Remove the mounting screws located on the back of the processors



To remove the cover, push the cover backward and pull it upward

Figure A-1. Main Processors and Front-end Processors—Cover Removal

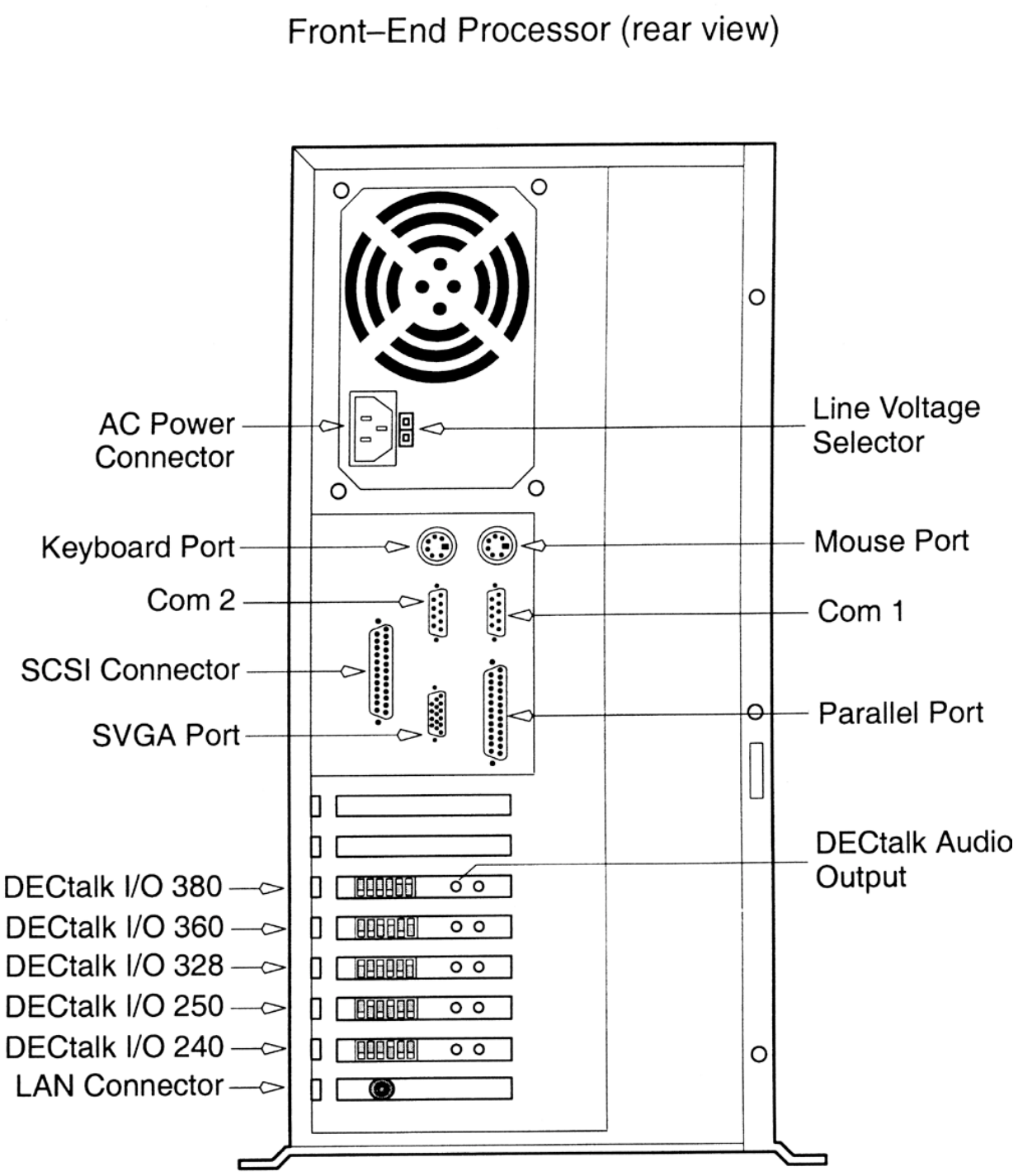


Figure A-5. Front-end Processors—Rear View

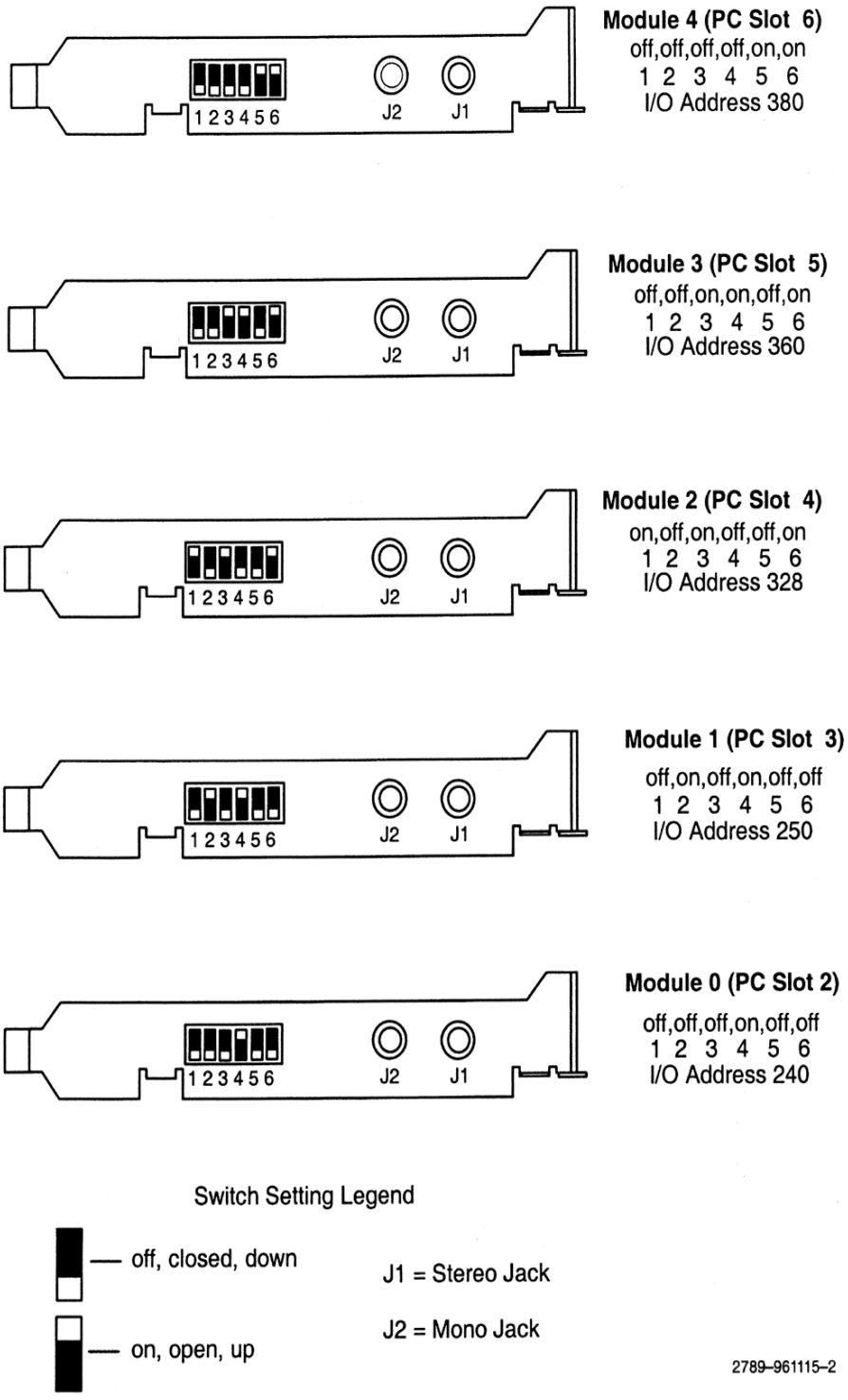


Figure A-11. DECtalk Card Switch 2 Settings for I/O Addresses

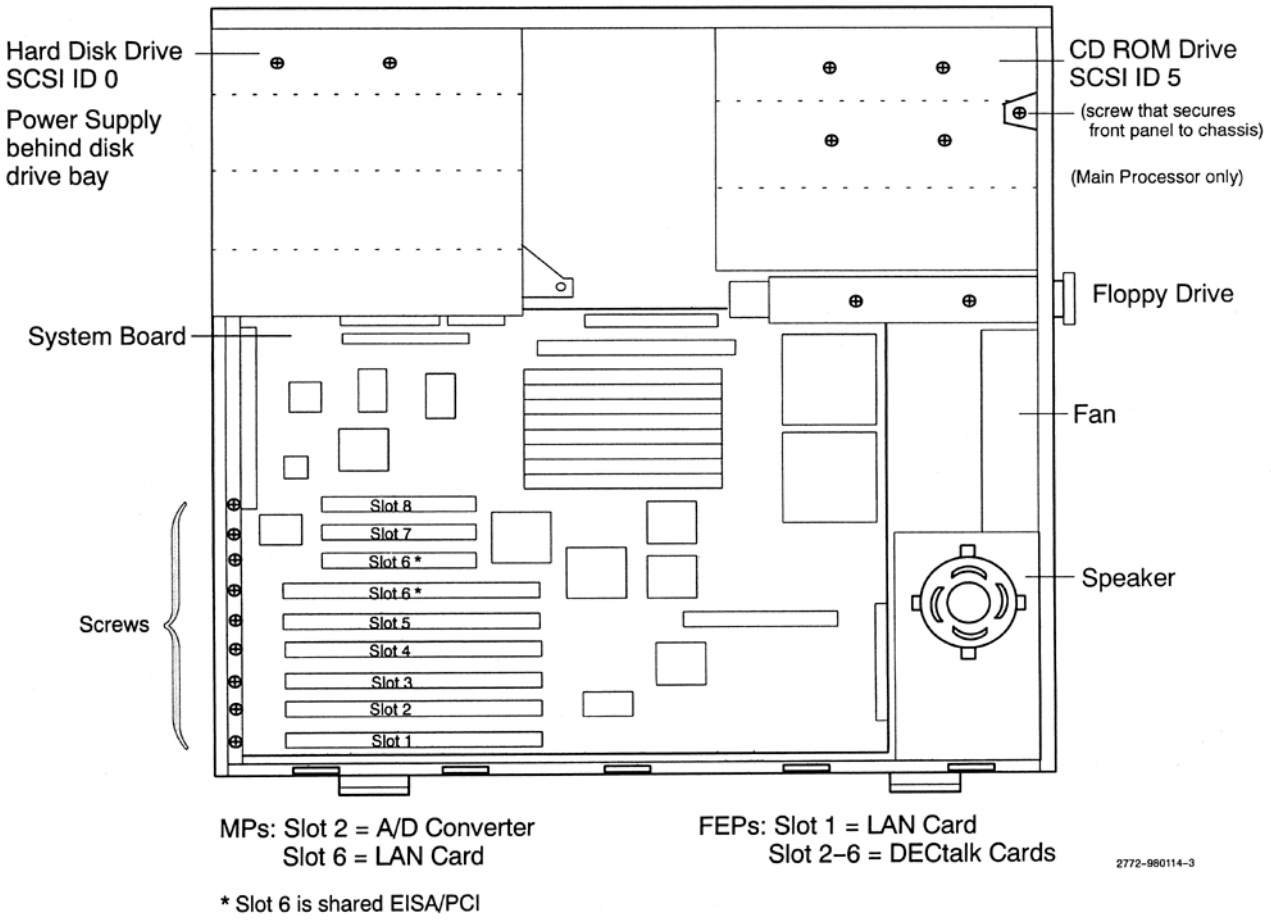


Figure A-13. Main Processors & Front-End Processors (side panel removed)

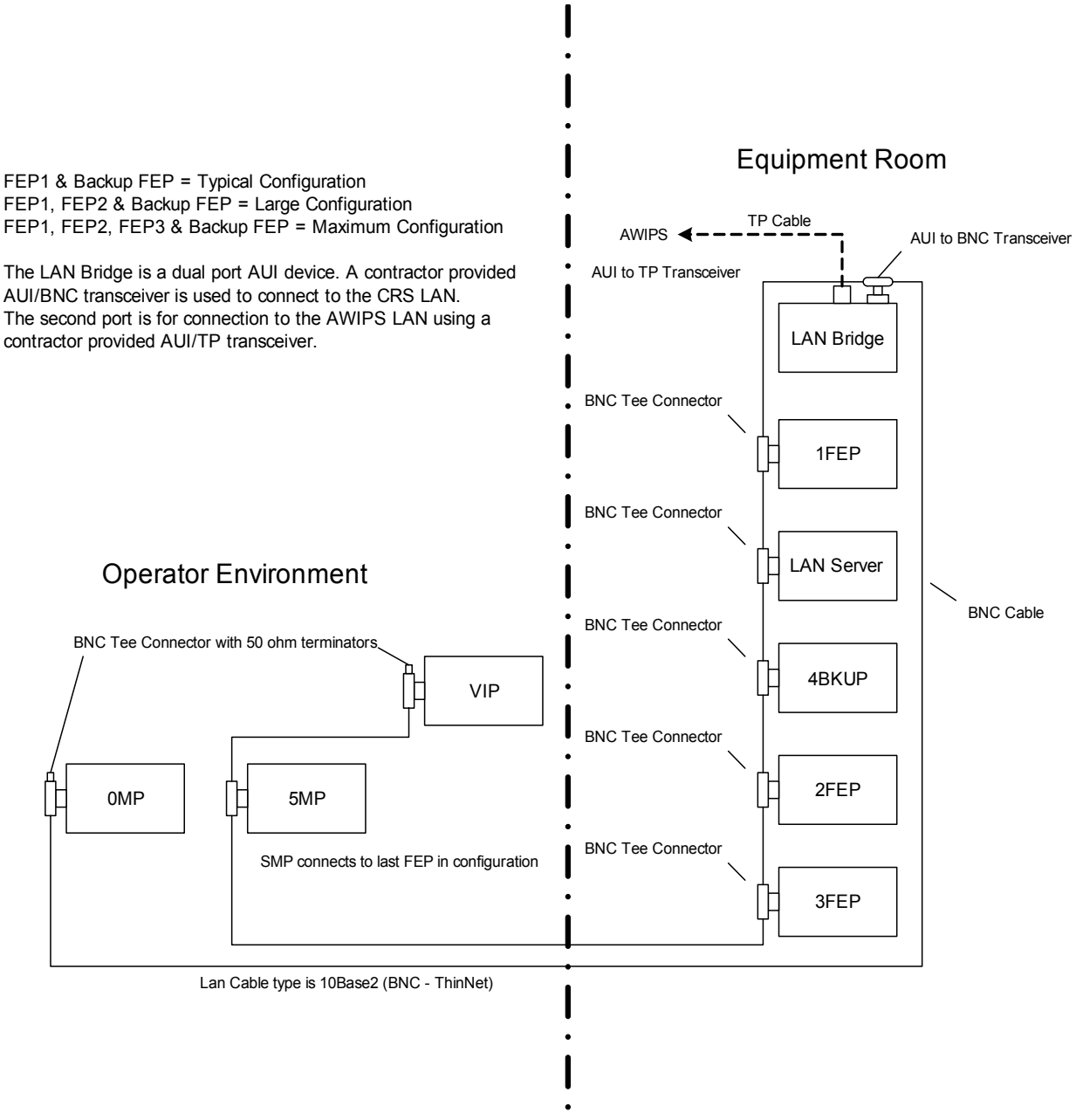


Figure A-15. LAN Cable Distribution Scheme

ATTACHMENT C
New Configuration Physical Verification
11-Channel System
Required MPs, FEPs, DECtalks, ASC, and ASMs

The **Maximum 11-channel** system has 2 MPs (0MP and 5MP), 4 FEPs (1FEP, 2FEP, 3FEP, and 4BKUP), 18 DECtalk cards, 1 ASC card, and 14 ASM cards:

0MP	main processor 1		
5MP	main processor 2		
1FEP	front-end processor 1		
	LAN Card	LAN interface	(slot 1)
	DECtalk 1	channel 1	(slot 2)
	DECtalk 2	channel 2	(slot 3)
	DECtalk 3	channel 3	(slot 4)
	DECtalk 4	channel 4	(slot 5)
	DECtalk 5	PB1	(slot 6)
2FEP	front-end processor 2		
	LAN Card	LAN interface	(slot 1)
	DECtalk 1	channel 5	(slot 2)
	DECtalk 2	channel 6	(slot 3)
	DECtalk 3	channel 7	(slot 4)
	DECtalk 4	channel 8	(slot 5)
	DECtalk 5	PB2	(slot 6)
3FEP	front-end processor 3		
	LAN Card	LAN interface	(slot 1)
	DECtalk 1	channel 9	(slot 2)
	DECtalk 2	channel 10	(slot 3)
	DECtalk 3	channel 11	(slot 4)
4BKUP	backup front-end processor		
	LAN Card	LAN interface	(slot 1)
	DECtalk 1	backup channel 1, 5, or 9	(slot 2)
	DECtalk 2	backup channel 2, 6, or 10	(slot 3)
	DECtalk 3	backup channel 3, 7, or 11	(slot 4)
	DECtalk 4	backup channel 4 or 8	(slot 5)
	DECtalk 5	backup PB1, or PB2	(slot 6)
ASA	audio switch assembly		

ASC	audio switch controller		
	ASM 1	channel 1	(slot 1)
	ASM 2	channel 2	(slot 2)
	ASM 3	channel 3	(slot 3)
	ASM 4	channel 4	(slot 4)
	ASM 5	channel 5	(slot 5)
	ASM 6	channel 6	(slot 6)
	ASM 7	channel 7	(slot 7)
	ASM 8	channel 8	(slot 8)
	ASM 9	channel 9	(slot 9)
	ASM 10	channel 10	(slot 10)
	ASM 11	channel 11	(slot 11)
	ASM PB1	monitor/playback channel 1	(slot PB1)
	ASM PB2	monitor/playback channel 2	(slot PB2)
	ASM Spare	spare	(slot S)

DECtalk Card Configurations

There is one I/O jumper to be set on each DECtalk card:

	FEP Name	FEP Slot #	I/O Address Jumper
1FEP DECtalk 1 (channel 1)	1FEP	2	240
1FEP DECtalk 2 (channel 2)	1FEP	3	250
1FEP DECtalk 3 (channel 3)	1FEP	4	328
1FEP DECtalk 4 (channel 4)	1FEP	5	360
1FEP DECtalk 5 (mon/playback chan 1)	1FEP	6	380
2FEP DECtalk 1 (channel 5)	2FEP	2	240
2FEP DECtalk 2 (channel 6)	2FEP	3	250
2FEP DECtalk 3 (channel 7)	2FEP	4	328
2FEP DECtalk 4 (channel 8)	2FEP	5	360
2FEP DECtalk 5 (mon/playback chan 2)	2FEP	6	380
3FEP DECtalk 1 (channel 9)	3FEP	2	240
3FEP DECtalk 2 (channel 10)	3FEP	3	250
3FEP DECtalk 3 (channel 11)	3FEP	4	328
4BKUP DECtalk 1	4BKUP	2	240
4BKUP DECtalk 2	4BKUP	3	250
4BKUP DECtalk 3	4BKUP	4	328
4BKUP DECtalk 4	4BKUP	5	360
4BKUP DECtalk 5	4BKUP	6	380

ASM Card Configurations

There are five jumpers to be set on each ASM card:

	ASA Slot #	Silence Alarm-Jumper "JP1"	ACP Channel Select Jumper "JP2" & "JP3"	BKUP Live/ Playback Cntrl Jumper "JP4"	FEP Select Jumper "JP5"
ASM 1 (channel 1)	1	EN (Enable)	1	BUL2	1FEP
ASM 2 (channel 2)	2	EN (Enable)	2	BUL2	1FEP
ASM 3 (channel 3)	3	EN (Enable)	3	BUL2	1FEP
ASM 4 (channel 4)	4	EN (Enable)	4	BUL2	1FEP
ASM 5 (channel 5)	5	EN (Enable)	5	BUL2	2FEP
ASM 6 (channel 6)	6	EN (Enable)	6	BUL2	2FEP
ASM 7 (channel 7)	7	EN (Enable)	7	BUL2	2FEP
ASM 8 (channel 8)	8	EN (Enable)	8	BUL2	2FEP
ASM 9 (channel 9)	9	EN (Enable)	9	BUL2	3FEP
ASM 10 (channel 10)	10	EN (Enable)	10	BUL2	3FEP
ASM 11 (channel 11)	11	EN (Enable)	11	BUL2	3FEP
ASM PB1 (mon/playback chan 1)	PB1	DIS (Disable)	PB1	PB	1FEP
ASM PB2 (mon/playback chan 2)	PB2	DIS (Disable)	PB2	PB	2FEP

ASC Card Configuration

Refer to figure 1. On both the operational and spare ASC, set the backup channel configuration by positioning the seven jumpers on JP1. Using all seven jumpers, move the jumpers to the side of the block that lists the number of output channels for your site configuration (the center row of pins is common). For example, if your site has 5, 6, 9, or 10 channels, connect each jumper from the center pin to the top pin; if your site has 1, 2, 3, 4, 7, 8, 11, 12, or 13 channels, connect each jumper from the center pin to the bottom pin.

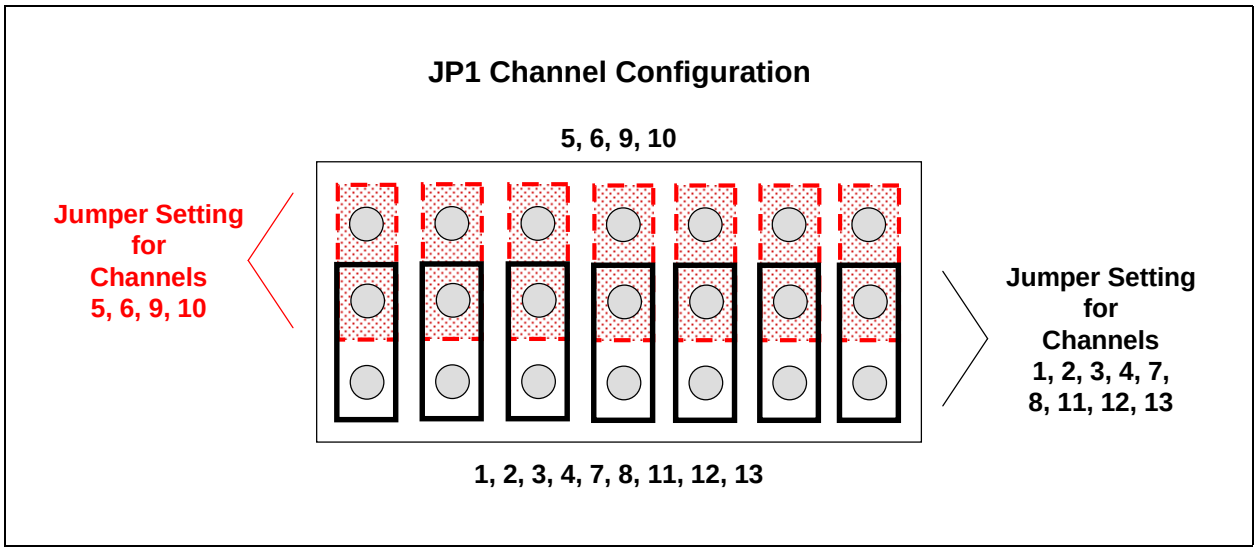


Figure 1. ASC Card Jumper Block

Cable Label Between DECtalk Card and ASM Card

From	To	Cable Label
1FEP DECtalk 1 “J2” Port	ASM 1 “IN Port”	1-1
1FEP DECtalk 2 “J2” Port	ASM 2 “IN Port”	1-2
1FEP DECtalk 3 “J2” Port	ASM 3 “IN Port”	1-3
1FEP DECtalk 4 “J2” Port	ASM 4 “IN Port”	1-4
2FEP DECtalk 1 “J2” Port	ASM 5 “IN Port”	2-1
2FEP DECtalk 2 “J2” Port	ASM 6 “IN Port”	2-2
2FEP DECtalk 3 “J2” Port	ASM 7 “IN Port”	2-3
2FEP DECtalk 4 “J2” Port	ASM 8 “IN Port”	2-4
3FEP DECtalk 1 “J2” Port	ASM 9 “IN Port”	3-1
3FEP DECtalk 2 “J2” Port	ASM 10 “IN Port”	3-2
3FEP DECtalk 3 “J2” Port	ASM 11 “IN Port”	3-3
1FEP DECtalk 5 “J2” Port	ASM PB1 “IN Port”	1-5
2FEP DECtalk 5 “J2” Port	ASM PB2 “IN Port”	2-5

Cable Label Between DECtalk Card and ASC Card

From	To	Cable Label
4BKUP DECtalk 1 “J2” Port	ASC “BKUP Audio 1” Port	4-1
4BKUP DECtalk 2 “J2” Port	ASC “BKUP Audio 2” Port	4-2
4BKUP DECtalk 3 “J2” Port	ASC “BKUP Audio 3” Port	4-3
4BKUP DECtalk 4 “J2” Port	ASC “BKUP Audio 4” Port	4-4
4BKUP DECtalk 5 “J2” Port	ASC “BKUP Audio 5” Port	4-5

ATTACHMENT D
Sample EMRS Report